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ABSTRACT

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INSTRUCTIONAL ECOLOGY AND ACADEMIC RESPONDING TIME FOR STUDENTS IN DIFFERENT READING GROUPS

Janet L. Graden, Martha L. Thurlow, James E. Ysseldyke, and Bob Algozzine

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July, 1982

Abstract

Twenty-seven second-grade students were observed during two reading periods to examine the nature of instruction and academic responding time for students in high, middle, and low reading groups. Across all groups, it was found that students spent about 20 minutes of a 120-minute typical reading period actively engaged in academic responding, and only about two minutes reading aloud and eight minutes reading silently. Comparisons between high, middle, and low reading groups revealed that, in most respects, reading groups were more similar than they were different in instructional and student responding variables. Findings related to the breakdown of time in a typical reading period and variability among students also are presented. The importance of time engaged in reading as a crucial instructional variable contributing to students' achievement differences in reading is discussed.

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Instructional Ecology and Academic Responding Time for Students in Different Reading Groups

The topic of students' reading achievement has engendered considerable interest in educational research. There is the popular belief that students' reading scores are declining, which was described by Flesch (1955) and made public by Packard (1974). Although the belief that reading scores of today's students are dropping has been refuted (Farr & Tuinman, 1974), there is still concern about the reading ability of many students. For example, a substantial number of teachers' academic referrals are for reading-related difficulties (Ysseldyke, Christenson, Pianta, & Wang, 1982). Since reading skills are essential to the mastery of other school subjects, several investigations have focused on how reading instruction occurs.

One method that has been employed in the study of reading is the naturalistic observation of reading periods to investigate differential teacher interactions with students at different reading levels. Yet another observational methodology that has been used in the study of reading instruction involves the description of how time is spent in the classrooms--how teachers allocate time, what tasks and materials are used, and in what types of responses individual students are engaged. This area of study has been called "academic engaged time," "academic learning time" (Fisher, Berliner, Filby, Marliave, Cohen, & Dishaw, 1980), "opportunity to learn," or "academic responding time" (Greenwood, Delquadri, Stanley, Terry, & Hall, 1981;

Hall, Delquadri, Greenwood, & Thurston, 1980). The study of academic responding time has been directed at investigating the extent to which, and during which instructional contexts, students are engaged academically. It is argued that perhaps some children have difficulty reading because they have not had sufficient opportunity to practice reading (Hall et al., 1980).

Observational research of teachers' interactions with different reading groups has resulted in conflicting findings. Goldenberg (1966) reported on observations over a three-month period in seven first-grade classrooms during reading instruction; he found that teachers spent more time with their higher reading groups. Furthermore, it was reported that the teachers conducted reading instruction to higher groups during "prime time" (e.g., in the morning as opposed to the end of the day). Rist (1970) and McDermott (1977) reported similar findings regarding advantages both in quantity and quality of instructional time given to higher reading groups; their conclusions were based on ethnographic observations of one classroom over time. Brophy and Good (1974) cited several of their studies which demonstrated that higher achieving students received more favorable interactions with teachers, including more opportunities to respond. Together, these studies suggest that students in higher reading groups receive a higher quantity as well as quality of of reading time. However, other studies have reached opposite conclusions. In a study of 15 second-grade teachers judged as "good" teachers, Alpert (1974) found no differences in either amount of reading time or quality of teacher interactions for students in different reading groups.

Weinstein (1976) conducted observations in three first-grade classrooms and found that low reading group students received more opportunities to read and more teacher praise. The conflicting findings in the teacher interaction research may be partially due to differences between the classes and teachers studied. This may particularly be the case in the Alpert (1974) study, in which only teachers rated as "good" were observed.

Another group of studies relevant to the teaching of reading are the observational studies on academic engaged time. These studies have described teacher and student instructional variables without regard to group differences. Overall, these studies have shown that of the time "allocated" to reading by teachers, only a portion of the time is actually "engaged" in reading by students (Hall et al., 1980; Rosenshine, 1980). Furthermore, reports have indicated that there is considerable variability both in time allocated to reading between classrooms and time engaged in reading by individual students (Berliner, 1979). In a major investigation of academic engaged time by the Beginning Teacher Evaluation Study, observations were conducted on 139 grade two and 122 grade five students during reading and math instruction. A report of this study by Rosenshine (1980) revealed that an average of one hour and thirty minutes was allocated to second-grade reading and one hour and fifty minutes to fifth-grade reading. Of this time, an average of one hour and four minutes was "engaged" in on-task responses in second grade, and one hour and twenty minutes was "engaged" in fifth grade. Studies of time spent in learning at the Juniper Gardens Children's Project (Greenwood et al.,

1981; Hall et al., 1980) resulted in similar estimates of time allocated to reading in elementary classrooms. Greenwood et al., (1981) reported that an average of about one hour was allocated to reading in fourth-grade classrooms in the four schools studied. However, in a discrete analysis of actual reading behaviors of the 93 fourth-grade students studied, it was reported that only about 15 minutes per day were engaged in the academic behavior of silent reading. In an earlier pilot study, Hall et al. (1980) reported that the 12 elementary students who were observed engaged in silent reading for 11 minutes per day and oral reading for only four minutes per day.

Studies on the effectiveness of various reading programs have concluded that time allocated to reading instruction is significantly related to the success of reading programs (Guthrie, Martuza, & Seifert, 1976; Harris & Serwer, 1966; Samuels, 1981; Stallings, 1975, 1976). Therefore, the studies on allocated and engaged time lead to important implications for the study of reading instruction. Because of the demonstrated relationship between instructional time in reading and reading achievement, it is important to assess the extent to which students in different reading groups spend different amounts of time in reading. Studies using the engaged time model have not yet been directed at assessing reading group differences, and the student-teacher interaction studies that addressed reading group differences did not measure student academic responses and the instructional contexts in as specific and detailed a manner as the engaged time studies. Thus, the present investigation was designed to apply the observational methodology of the instructional ecology and engaged

time (specifically, that of Hall et al., 1980 and Greenwood et al., 1981) to the study of reading group differences.

The current research sought to investigate the nature of the instructional ecology (i.e., time allocated to activities, instructional tasks, teaching structures, teacher positions, and teacher behaviors) and the actual engaged responses of students in different reading groups. Specifically, this study addressed these major research questions:

- What is the instructional ecology of a "typical" reading period for students regardless of reading level?
- To what extent are there significant differences between students in different reading groups in time allocated to various activities?
- To what extent are there significant differences between students in different reading groups in time allocated to various tasks?
- To what extent are there significant differences between students in different reading groups in time allocated to teaching structures?
- To what extent are there significant differences between students in different reading groups in the teacher's position relative to the student?
- To what extent are there significant differences between students in different reading groups in the teacher's response relative to the student?
- To what extent are there significant differences between students in different reading groups in time spent engaged in various student responses?

Method

Subjects

Twenty-seven second-grade students (16 male, 11 female) from 10 elementary schools in a midwestern suburban school district served as

subjects. These students were receiving reading instruction in 14 different levels of the Houghton-Mifflin Reading Series. Their reading teachers included 25 females and 1 male; 7 of the teachers were reading specialists rather than regular second-grade teachers.

Three students were selected from each of the 10 schools to reflect the high, middle, and low second-grade reading groups within each school. The distribution of reading groups was plotted for each school and one high, one middle, and one low group were selected. Then, from the student lists for each of these groups, one student was selected randomly using a random numbers table. This selection procedure resulted in a within-school analysis where low, middle, and high groups were defined solely by the distribution of groups within each school (see Table 1). Because a middle group student was lost from one school (School 10), that school's groups were excluded in this analysis, resulting in a total N of 27 (9 in each level).

Insert Table 1 about here

All teachers and students were volunteer participants in the observational study. Consent forms were sent to all second-grade teachers and students by the school district and selections were made from those agreeing to participate.

Observation System

The CISSAR (Code for Instructional Structure and Student Academic Response) observation system was used in this study. The version of the system employed was developed by the Juniper Gardens Children's

Project in Kansas City, Kansas (Greenwood, Delquadri, & Hall, 1978). The system focused the observation on the behavior of one target student (rather than sampling behaviors of several students) and allowed observers to record six event areas: (a) activity (12 codes), (b) task (8 codes), (c) teaching structure (3 codes), (d) teacher position (6 codes), (e) teacher activity (5 codes), and (f) student response (19 codes). Seventeen stop codes also were used to record reasons for termination of observation. Table 2 summarizes the definitions of the event areas and the specific events recorded within each area. Detailed definitions and examples are presented in Appendix A. Excluding the stop codes, a total of 53 different events could be recorded with the CISSAR system.

Insert Table 2 about here

An interval time sampling technique was used to direct the recording of events. Three event areas were recorded every 10 seconds over the entire observation session. Coding was structured into blocks of seven 10-second intervals. During the first 10-second interval, activity, task, and teaching structure were recorded. During each of the next six 10-second intervals, teacher position, teacher activity, and student response were recorded. This pattern was maintained throughout the observation.

An auditory electronic timer attached to a clipboard was used to signal the 10-second intervals. The timer was equipped with an earplug so that only the observer could hear the signal (a short beep

sound). The clipboard was used to hold coding sheets and to provide a hard surface for marking events.

The coding sheets, modeled after those used by the Juniper Gardens Children's Project (Stanley & Greenwood, 1980), were designed at Minnesota's Institute so that they could be read automatically by an optical scanner (see Appendix B). To be read correctly by the scanner, the circles on the coding sheet had to be very dark and completely filled. In addition to spaces for coding student identification and start and stop times, each sheet contained three blocks representing 70 seconds each.

Observers

Eleven individuals served as observers during the present study. Nine of the observers were responsible for the majority of the observations. The other two observers were substitutes who filled in for reasons of sickness, make-up observations, and so on. These substitute observers were Institute staff members who conducted observer training sessions and monitored the regular observers. The regular observers were all females who had been selected from a pool of 50 female applicants who had responded to an ad in a local newspaper. A prerequisite for consideration was that the applicant not have a background in education; the goal was to minimize biases that might be brought to the classroom setting. Additional selection criteria included average or above average reading ability and performance on selected parts of a general office skills test. A personal interview with one of two IRLD staff members comprised the final step of selection.

Of the nine selected observers, two had attended college for at least one year and one had a BA. Two others had completed a business or vocational school program. Previous employment varied greatly, including sales, clerical, foster parent, own business, and social worker. All but two observers had a child or children in elementary or secondary school. Observers did not work in schools in which their children were enrolled.

Procedures

Observer training. Training of observers in the observation system was accomplished through the use of an Observer and Trainer's Manual (Stanley & Greenwood, 1980). The manual presented eight units that, according to the authors, were sequenced in terms of the complexity of the recording skills covered. Training required observers to read materials and then practice coding small numbers of events through the use of a variety of other media, including flashcards, overheads, and videotapes. Exercises and quizzes were presented throughout the manual. Mastery (100%) of the material in each unit was required before continuing in the training to the next unit.

Training in the system was conducted by four Institute staff members. Two weeks of half-day training sessions were required to cover the material presented in the manual. This was followed by two to three days of practice coding within actual classrooms.

Data collection. The trained educational observers coded activities during the two hours designated for second-grade reading instruction by the school district. In most cases, this was

continuous observation; in a few cases, the two hours were divided in some way (1 hour in the morning and 1 hour in the afternoon, or 1 1/2 hours in the morning and 1/2 hour in the afternoon). During observations, observers attempted to position themselves to be unobtrusive and to avoid revealing the identity of the target students to the teachers, the target students themselves, or to other students.

Use of the optical scanner coding sheets typically required observers to mark only slashes in the appropriate circles while observing because the 10-second interval did not provide enough time for circles to be darkened sufficiently to be read accurately by the optical scanner. As a result, observers darkened the slashed circles after the actual observation was completed, either during break periods, in the evenings, or on the weekends. This procedure tended to reduce errors in the coding of data.

Frequently, the coded observational data were supplemented with an anecdotal recording. Generally, anecdotal recordings were used to provide a description of the classroom setting and anything unusual that may have occurred during observations. The observers were provided with guidelines for anecdotal recordings (see Appendix C) to help them determine when they were needed and what they should cover.

Each target student was observed for two days of reading instruction. The decision to collect two days of data on each student was based on stability analyses presented by Greenwood et al. (1981), in which they found one day of observation predicting 62% and 92% of the variance for activity and student response, respectively. The observations were scheduled so that students would not be observed

twice on the same day of the week; typically the two days of observation were consecutive. All observations (2 days for 27 students) were completed in late April and early May.

Observers were kept blind as to the reading group classification of the students they observed. In certain cases, however, observers probably detected students in low groups by virtue of the fact that some of these students received their reading instruction from a reading specialist outside of the regular second-grade classrooms.

Reliability. Reliability checks were conducted to detect any inconsistencies in coding among observers or between an observer and the established code definitions. The reliability checks were conducted by another observer (designated the "reliability observer") who joined the observer in the classroom and coded events on the target student for approximately 14 minutes (4 pages of observation).

Two types of reliability were checked: (a) behavioral, and (b) sequential. Behavioral reliability was a measure of observer agreement on a specific event being observed; behavioral reliabilities were calculated for (a) teacher position, (b) teacher activity, and (c) student response. The second type of reliability, sequential reliability, was a measure of observer agreement on a sequence of items; this measure was designed to document that observers were coding in the sequence required by the observation system. According to the CISSAR training manual, the desired levels of reliability were 90% for behavioral reliability and 85% for sequential reliability.

Because of the desire not to lose observation data on any of the subjects (which occurred when the reliability observer stopped to

watch another observer's student) and the inavailability of "extra" qualified observers, reliability checks were not conducted during the current study. However, data were obtained on the reliability of all regular observers during a study that immediately preceded the present study. The data from the 10 reliability checks are summarized in Table 3.

Insert Table 3 about here

To maintain adequate levels of reliability during the present study, meetings were held to discuss coding problems, reliability disagreements, and so on. These were held on a weekly basis. At the meetings, definitions were reviewed and any disagreements were resolved.

Achievement testing. At the end of the school year, 22 of the students were administered the Peabody Individual Achievement Test (PIAT; Dunn & Markwardt, 1970) by trained testers. Four of the educational observers and four Institute staff members served as testers. Observers were not permitted to test students they had observed. The remaining students (n=5) were not tested either because they were absent on the day of testing or because parental permission for testing was not given. The students for whom PIAT data were not obtained were from the low and middle reading groups.

Data Analysis

Total amounts of time each student spent in the 53 observed events and in five event composites (academic activities, non-academic

activities, academic student responses, task management student responses, inappropriate student responses) over the two days of observation comprised the dependent measures that were analyzed in this study. For descriptive purposes, these times were transformed to represent the time spent in each event during one day's reading period. Because the observation system was designed to record as much data as possible during each 10-second interval, the activity, task, and structure were coded once every 70 seconds, while the teacher position, teacher activity, and student response were coded six times every 70 seconds. Thus, transformation of times from the recording system produced slight overestimates of the time spent in each activity, task, and structure, and slight underestimates of the time spent in each teacher position, teacher activity, and student response. The transformed times appear in all tables and figures, but were not used in the actual data analyses.

All data were analyzed using analyses of variance (ANOVAs) to identify significant differences ($p < .05$) between reading group means. Follow-up tests on significant ANOVAs were conducted using the Student-Newman Keuls procedure. Additionally, students' end-of-the-year PIAT data were correlated with their student response times.

Results

A Typical Reading Period

The first research question concerned the nature of instruction during a typical reading period. During the scheduled reading period (120 min) not all of the time was allocated to reading; time also was allocated to such activities as transitions and occasionally to other

subject areas. Additionally, a portion of the scheduled reading time was spent in moving between classrooms and consequently was not observed and coded. The portion of scheduled time that was not spent in the classrooms and was not observed is labeled non-instructional time. Within the observed reading time, observations of individual students revealed differences in the actual time they were engaged in reading. Thus, a breakdown of time in reading periods ranges from the time scheduled for reading instruction, to the time allocated, or used, for reading instruction, to the time an individual student actually is engaged in a reading response. In the observation system employed, direct observation was used to collect data on the allocated time variables (activity, task, structure, teacher activity, and teacher position) and on the engaged time variables (student responding). The following description of the time breakdown and nature of instruction in a typical two-hour reading period is based on the average of two periods of observation on each of the 27 students.

Activity. In describing the time breakdown of a typical reading period, of major importance was the amount of time allocated to reading and other subjects during the scheduled period. During the 87.3 minutes of scheduled reading time observed, on the average, 81.1 minutes were allocated to reading. About 30 minutes (labeled non-instructional time) were not observed and consisted primarily of students moving between classrooms. The remaining time was allocated to free time (2.8 min), transitions (1.8 min), or other academic subjects (1.6 min). The average times allocated to reading and other activities are shown in Figure 1.

Insert Figure 1 about here

Task. One area of interest in the investigation of the nature of reading instruction was how time was allocated to various instructional and non-instructional tasks. As shown in Figure 2, most reading instruction occurred through the use of worksheets, other media (e.g., games, flashcards), readers, or workbooks. Relatively little time was allocated to reading instruction with paper and pencil tasks, listening to teacher lecture, or teacher and student discussion. About five minutes per reading period were allocated to getting materials ready (fetch and put away).

Insert Figure 2 about here

Teaching structure. Another aspect of the nature of instruction was how students were grouped in teaching structures. The average amounts of time allocated to various structures are depicted in Figure 3. The majority of reading time (63 min) was allocated to small group teaching, with roughly equal amounts of time in either an entire class structure (13.2 min) or in individual instruction (11.3 min).

Insert Figure 3 about here

Teacher position. An additional instructional variable, shown in Figure 4, is the location of the teacher relative to the target

student. Teachers spent most of their reading period time among students (about 49 min). Instruction with the teacher in front of the class, at his/her desk, or at the side of the target student occurred less frequently during the reading period.

Insert Figure 4 about here

Teacher activity. Also of interest in the description of reading instruction is the teacher's response relative to the observed student. As shown in Figure 5, the most frequent teacher activity was the category of no response, in which the teacher is not demonstrating any observable response toward the observed student. The average amount of teaching response received by any one student in a typical reading period was about 18 minutes. On the average, students received either approval or disapproval for less than one-half minute of a reading period.

Insert Figure 5 about here

Student response. A major focus of the investigation was how individual students were engaged during reading instruction. Figures 6-8 contain the breakdown of average times engaged in academic responding, task management responding, and inappropriate responding during reading.

Insert Figures 6-8 about here

The representation of how students spent time engaged in active academic responding is included in Figure 6. In the typical reading period, students were engaged for about 20 minutes in active academic responses, including silent and oral reading, writing, and answering and asking questions. Of the scheduled 120 minutes of reading instruction and of the 81 minutes of allocated reading instruction, students actually were engaged in reading silently for about eight minutes and in reading aloud for less than two minutes.

Task management responses comprised the major portion of students' time; about 41 minutes of the typical reading period were spent engaged in all task management responses as shown in Figure 7. The largest amount of task management responding (about 29 min) included the category of passive responding (e.g., waiting for instruction, listening to another student read). Other task management time included time engaged in looking for materials, moving, or teacher-approved play.

Students were engaged in inappropriate behaviors for about 12 minutes of reading time (see Figure 8). The majority of this time was engaged in looking around or in non-academic talk.

Variability. The description of the typical reading period masks the considerable diversity apparent between individual students in how reading time was allocated and how the students were engaged. The average times and ranges in times allocated to activities, tasks,

structures, teacher positions, and teacher responses, and times engaged in various student responses are listed in Tables 4-9. Highlights of the variability between students are described below.

Insert Tables 4-9 about here

While the average daily amount of time allocated to reading was 81 minutes, the actual time allocated to reading ranged from 35 to 107 minutes. Within the scheduled reading time, the time allocated to non-instructional activities also varied widely; for example, the time allocated to free time during reading varied from zero minutes to 25 minutes and time allocated to transitions during the reading period ranged from a low of zero minutes to a high of 11 minutes. Time allocated to instruction with readers ranged from zero minutes to almost 45 minutes, while time allocated to getting materials ready ranged from zero minutes to a high of 17.5 minutes. While the majority of students received most of their reading instruction in a small group, some received either totally entire group or individual instruction. Time that teachers spent among students in reading ranged from about 7 minutes to over 83 minutes, and the time that an observed student received instruction with the teacher at his/her side during reading ranged from a low of zero minutes to a high of 33 minutes. The range in time in which a teaching response was displayed toward the observed student ranged from about two minutes to 39 minutes, and the amount of either approval or disapproval received in reading instruction varied from zero minutes to not quite two minutes.

Individual students varied greatly also in time spent engaged in various responses. Total time spent engaged in academic responding in a reading period ranged from a low of six and one-half minutes for one student to 37 minutes for another student. Time engaged in task management responses by individual students ranged from about 20 minutes to about 60 minutes of the reading period; and time engaged in inappropriate behaviors ranged from only about one minute for one student to almost one-half hour of reading period for another student. For specific types of responses, the ranges also were striking. For example, the time that individual students were engaged in reading silently ranged from 36 seconds to 26 minutes, time engaged in reading aloud ranged from zero minutes to not quite eight minutes, and time engaged in passive responding varied from 12 to 43 minutes.

This demonstrated diversity in the nature of instruction and engaged time for individual students points to the need to investigate the extent to which systematic differences exist between groups of students at varying reading levels.

Comparisons Between Reading Groups

Research questions two through seven dealt with the extent to which students in different reading group levels differed in the nature of instruction they received or in the types of responding in which they were engaged. Significant differences between high, middle, and low groups in allocated and engaged time variables are summarized here.

Activity and activity composite. Comparisons in the time allocated to reading and other activities are listed in Table 10.

High, middle, and low reading groups did not differ significantly in time allocated by their teachers to different activities during the scheduled reading time. For all groups, more than 90% of the scheduled reading time (or about 80 minutes) was allocated to reading. Composites were formed to assess time allocated to academic activities versus time allocated to non-academic activities. It was found that high, middle, and low reading groups differed in the total time allocated to academic activities, $F(2,24) = 3.73$, $p = .039$. Specifically, middle reading group students received significantly more time allocated to academic activities than students in the other two groups.

Insert Table 10 about here

Task. As shown in Table 11, different reading group levels did not differ significantly in time allocated to various tasks, with the exception of time allocated to listening to a teacher lecture. Middle and high groups received significantly more reading instruction through lecture than low groups students, $F(2,24) = 4.28$, $p = .026$, although the time allocated to listening to lecture was small for all groups (less than two minutes per reading period). All reading group levels received most of their instruction through worksheets, readers, other media, or workbooks.

Insert Table 11 about here

Teaching structure. Significant differences between reading groups were found in time allocated to small group instruction, $F(2,24) = 5.86$, $p = .008$, and time allocated to individual instruction, $F(2,24) = 4.69$, $p = .020$ (see Table 12). Follow-up tests revealed that while middle and high reading group students received significantly more small group instruction, low reading group students received significantly more individual instruction. Middle and high students received at least 80% of their instruction (about 80 min and 73 min, respectively) within small groups, and low students received about 50% small group instruction (43 min). Students in the low reading groups received about 28% of their reading instruction (about 23 min) in an individualized structure, whereas middle and high students received 3.4% and 0.5% (3 min and 30 sec), respectively, of individual instruction.

Insert Table 12 about here

Teacher position. Group means and percentages of time spent with the teacher in various positions are listed in Table 13. Only one significant difference between groups was found; low reading group students received more instruction with the teacher at their side than middle and high group students, $F(2,24) = 5.60$, $p = .010$. Students in the low reading group received about 11 minutes of reading instruction with the teacher at their side (16.3%), compared to only about one minute for middle or high group students (about 1.4%).

Insert Table 13 about here

Teacher activity. Differences were found between reading groups in the amount of time during which the teacher made no response, $F(2,24) = 7.22$, $p = .004$. During the reading period, middle and high group students received more time during which no response was directed to them. Time of no teacher response totaled 75% or more of middle and high groups' reading time (63 min and 55 min, respectively) and about 64% (43 min) of the low groups' time. On the other hand, low reading group students received significantly more teacher approval than middle and high group students, $F(2,24) = 5.19$, $p = .013$, although the amounts of approval received were small for all groups (less than 30 sec per reading period). The average times and percentages of time allocated to all teacher activities are listed in Table 14.

Insert Table 14 about here

Student response and student response composites. There were few differences between students at varying reading levels in the actual responses in which they were engaged during the reading period. The group means and percentages of time spent engaged in various types of responding are contained in Table 15. Among the academic responses, high, middle, and low reading group students differed in time engaged in writing, $F(2,24) = 4.09$, $p = .030$, and time engaged in reading

aloud, $F(2,24) = 8.19$, $p = .002$. Middle reading group students were engaged in writing more than lower group students (about 10 min v 5 min per reading period), while high reading group students engaged in writing for about eight and one-half minutes of reading time. However, low reading group students spent significantly more reading time engaged in reading aloud than did other groups, although the times were low for all groups (about 2 1/2 min for the low group, 54 sec and 24 sec, respectively, for the high and middle groups). For all other types of student responding, including all types of task management and inappropriate responding, students in different reading groups did not differ significantly. Additionally, students in different reading groups did not differ significantly in amount of time engaged in each of the three composite categories of student responding (academic, task management, or inappropriate).

Insert Table 15 about here

Highlights of additional comparisons. In addition to comparisons between groups in time allocated to activities, tasks, structures, teacher positions, teacher activities, and time engaged in student responses, additional comparisons were completed for these variables in combination. For example, differences in student response as a function of the teaching structure or differences in student response as a function of the teacher's response were investigated. A complete listing of these additional research questions and the significant findings is included in Appendix D; specific findings of interest are

highlighted here.

Many significant differences between the groups were found as a function of the teaching structure. Generally, results followed the trend that lower group students differed from middle and high group students as a function of time spent in individual instruction and with the teacher at their side. For example, during individual reading instrucution, low reading group students received more opportunities to engage in reading aloud, $F(2,24) = 3.77$, $p = .038$, and to talk about academics, $F(2,24) = 4.72$, $p = .019$, yet they also had more time in passive responses, $F(2,24) = 4.46$, $p = .023$. Also, when the teacher was at their side (which is likely to occur during individualized instruction), low reading group students spent more time engaged in writing, $F(2,24) = 4.74$, $p = .018$, talking about academics, $F(2,24) = 4.80$, $p = .018$, but also spent more time in passive responding, $F(2,24) = 6.09$, $p = .007$.

Achievement Test Results

Comparison of achievement levels for reading groups. Analyses of variance completed on achievement test scores for the three reading groups revealed that high, middle, and low reading group students differed significantly on all PIAT subtests with the exception of scores on General Information. Group means on the PIAT are presented in Table 16. Results followed the general trend that the higher the reading group placement, the higher the measured achievement.

Insert Table 16 about here

Correlations between student responses and achievement. Correlations were computed between students' standard scores on each PIAT subtest and the total test with time engaged in each student response category; the significant correlations obtained are listed in Table 17. Three academic responses, writing, silent reading, and answering questions, were positively correlated with achievement, with correlations ranging from .37 to .48. Yet, three other academic responses, playing academic games, reading aloud, and talking about academics, were negatively related with achievement. These negative correlations ranged from -.39 to -.61. Finally, one task management response, raising hand, was positively correlated with reading recognition scores, r = .39, p = .037.

Anecdotal Comments

Observers recorded anecdotal comments on the students they observed in order to supplement the observational data. Observers noted the student's primary location in the class during reading instruction, the student's physical appearance, the student's interactions with the teacher, the student's peer relations, and the student's attention to task. These data were collected on 23 of the 27 students in the study (six in the high reading group, eight in the middle group, and nine in the low group).

Student's location. The majority of students observed in the high groups (four of six) were situated close to the teacher, while the majority of middle group students (six of eight) and low group students (five of nine) were located in the middle or back of the class. The remaining students were located as follows: Two high

group students in back of the class, two middle group students and two low group students close to the teacher, and two low group students' location was not noted.

Physical appearance. Regardless of reading group placement, most of the students were described as average in appearance relative to peers. Four of the six high group students, five of the eight middle students, and six of the nine low group students were described as average. Two high group students, one middle group student, and one low group student were described as more attractive than class peers. On the other hand, two low group students were described as less attractive than class peers, while no high or middle group students were described as less attractive. The remainder of the middle group either had missing data on this item (one student) or was described in irrelevant terms, such as "tanner than other students" (one student).

Teacher-student relationship. For the majority of middle and low reading group students, interactions with the teacher were described as average (i.e., amount and nature of student-teacher contacts was about the same as those of class peers). Seven of the eight middle group students and seven of the nine low group students were described as having average interactions with the teacher. Half of the high group students were described as receiving more favorable teacher interactions, while no middle group students and only one low group student were reported to receive more favorable interactions. Conversely, one low group student was described as receiving less favorable teacher interactions, while no middle or high group students were indicated as having less favorable interactions. Information on

teacher and student interactions was not recorded for one high and one middle group student.

Peer relationships. Most of the middle (six of eight) and low (seven of nine) reading group students and half of the high group students were described as interacting with peers in a manner similar to that of classmates. Two high group students, one middle student, and one low student were indicated to display better than average peer relations, while no middle and low group students and one high group student were described as having more negative peer interactions. Data on peer relationships were not available for one middle and one low group student.

Attention to task. While in most other areas noted above there was a tendency to rate students as "average," students' ability to attend to task was usually rated at extremes. Only two students (both in high reading groups) were noted to display attention to task at a level similar to class peers. The majority of low reading group students (seven of nine) were described as being off task more frequently, while one high group student and two middle group students were noted to have difficulty attending to task. Conversely, half of the high group and middle group students were described as displaying good attention to task. For the remaining students (one middle and one high), comments were not recorded.

Discussion

The major findings of this study regarding differences either in instruction or actual student responding between students in high, middle, or low reading groups revealed that in most respects, reading

groups were more similar than they were different. In this detailed investigation of reading instruction, it was found that high, middle, and low reading group students did not differ significantly in time allocated to reading or other activities or in the majority of categories of materials used, teacher positions, teacher activities, or student responses. The major differences between reading groups were that the low reading groups received more individual instruction and more approval while the middle and high reading groups received more small group instruction. Additionally, reading groups differed in total time allocated to academic activities, with middle reading groups receiving the most allocated academic time and low reading groups receiving the least. Yet, few differences emerged in the actual academic responses of students; middle group students engaged in more writing while low group students engaged in more reading aloud (but only about two and one-half minutes).

Compared to previous investigations which reported that higher students received advantages in reading instruction (Brophy & Good, 1974; Goldenberg, 1966; McDermott, 1977; Rist, 1970), the current study corroborated the Weinstein (1976) findings that low reading group students received more favorable treatment in some respects (i.e., received more praise and opportunities to read aloud). Alternative explanations for the conflicting findings between studies include methodological differences as well as possible real differences between the classrooms observed. It is possible that classrooms in this study differed from those observed in previous studies. A more reasonable explanation accounting for different

results is that the focus of observations in the investigations differed; previous observations included more qualitative judgments of teacher behaviors while this investigation focused less specifically on teachers and more generally on the entire classroom ecology and student responding.

Perhaps the most important finding of this study was the documentation of the small amount of time spent by all reading groups in actual reading responses. Of the 120 minutes of scheduled reading time, about 81 minutes were actually allocated to reading instruction. Of this, only about 20 minutes were actually engaged in all academic responses, with only about 10 minutes in reading responses (8 min in silent reading, 2 min in oral reading). On the other hand, over 40 minutes of the reading period were spent engaged in task management or waiting responses. These average times become striking when totaled over a typical school year. At this daily rate, students will spend 109 hours of reading time engaged in task management behaviors in a school year and only 21 hours reading silently and five hours reading aloud. The low amount of time spent engaged in silent reading has important implications when viewed in light of the finding that time spent reading silently is a significant correlate of achievement. While the correlational model between engaged time and achievement cannot be used to state that more engaged time causes higher achievement, it is plausible to suggest that a greater focus on time spent reading has important implications for student achievement.

Another striking finding was the considerable variability that existed between individual students in different aspects of reading

instruction. For example, the time allocated to reading for individual students ranged from a low of 35 minutes to a high of 107 minutes, time engaged in silent reading ranged from only 36 seconds for one student to 26 minutes for another student, and time engaged in oral reading ranged from zero minutes for one student to eight minutes for another student. When these daily differences in student engagement rates are summed over the course of the school year, these differences become even more striking. For example, if the daily differences continued at the same rate, the student who read 26 minutes in one day would read for 68 more hours over the course of the school year than the student who read for 36 seconds.

These findings of the limited amount of time spent reading in a typical reading period become important when viewed in light of Samuel's (1981) conclusion that time allocated to reading instruction is a crucial variable related to the success of reading programs. Also, in the current investigation, time engaged in silent reading was significantly correlated with reading, spelling, and total achievement scores. Therefore, although this and other investigations (e.g., Greenwood et al., 1981; Hall et al., 1980) have consistently demonstrated that limited amounts of time are spent engaged in academic responses, the focus on students' academic responding time has clear implications for improving reading instruction. Also, engaged time can be viewed as an important intervention strategy because student engaged time is an alterable variable which can be controlled by the teacher (Bloom, 1980).

That students learn to read by engaging in reading makes sense

both from an empirical and logical standpoint. The recent awareness of this relationship in the studies of academic engaged time leads to important implications for education. Efforts to translate this awareness into actual strategies to increase academic responding in classrooms need to be shared by researchers, administrators, university trainers, teachers, and parents to enhance learning by students at all achievement levels.

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Footnotes

The observational research reported here was part of an extensive project that could not have been completed without the cooperation and help of numerous individuals. Foremost among these were the administrators, teachers, and students in the school district in which the research was conducted. Equally important to the successful completion of the research were the observers; all were committed to providing an accurate, objective picture of the school day. Listed alphabetically, the observers for the present study were: Barbara Flykt, Eileen Mevissen, Donna Miller, Rose Marie Plant, Cheryl Randklev, Judith Rygwall, Yvonne Shafranski, Wendy Studer, and Geraldine Webster. In addition, the assistance of Sandra Christenson during observer training and Jean Greener for coordination of observations is gratefully acknowledged. The special assistance of Charles Greenwood and Sandra Stanley, University of Kansas, in the implementation of their CISSAR observational system was appreciated greatly, as was the data analysis expertise provided by Matthew Mcgue and Jing Jen Wang. Also essential to the completion of the project were the contributions of psychometric assistants Barbara Anderson, Lisa Boyum, Yetta Levine, and Cathy Walters. Special thanks are due to Cathy Walters for her preparation of the graphics of this report. Further, the excellent secretarial services provided by Audrey Thurlow and Marilyn Hyatt made the entire research process a success.

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Table 1

Reading Levels of High, Middle, and Low Reading Groups From Which Target Students were Selected in Each School[a]

School	High	Middle	Low
1	H3 (N=10)	G1 (N=12)	F1 (N=6)
2	H1 (N=11)	G1 (N=10)	E1 (N=5)
3	H1 (N=10)	F2 (N=12)	D (N=1)
4	I2 (N=5)	G2 (N=10)	E3 (N=3)
5	H2 (N=7)	G2 (N=10)	E3 (N=4)
6	H1 (N=9)	G2 (N=12)	F3 (N=9)
7	H2 (N=9)	F3 (N=13)	E1 (N=1)
8	H2 (N=18)	F2 (N=11)	E3 (N=1)
9	H3 (N=5)	G1 (N=12)	D (N=2)
10	H2 (N=10)	G1[b] (N=8)	E2 (N=2)

[a]Letters in the table represent the following Houghton-Mifflin books: D-Footprints; E-Honeycomb; F-Cloverleaf; G-Sunburst; H-Tapestry; I-Windchimes. Numbers represent magazines within books. Entries in parentheses indicate numbers in groups from which students were selected.

[b]This student had to be dropped because absenteeism prevented observation on two days before the end of the year.

Table 2

CISSAR Event Areas and Specific Events Coded[a]

Event Area	Specific Events Coded
Activity - type of instruction being provided/established by teacher	R - Reading M - Math S - Spelling H - Handwriting L - Language Sc - Science Ss - Social Studies Ac - Arts/Crafts Ft - Free Time Bm - Class Business/ Management Tn - Transition Ct - Can't Tell
Task - curriculum task or verbal instruction mode in which student is expected to engage	Rr - Readers Wb - Workbooks Ws - Worksheets Pp - Paper and Pencil Ll - Listen to Teacher Lecture Om - Other Media Tsd - Teacher-Student Discussion Fp - Fetch/Put Away
Teaching Structure - physical arrangement of student in class	Eg - Entire group Sg - Small group I - Individual
Teacher Position - location of teacher	IF - In Front of Class AD - At Desk AS - Among Students O - Out of Room S - Side B - Back
Teacher Activity - response of teacher to target student	NR - No Response T - Teaching OT - Other Talk A - Approval D - Disapproval
Student Response - behavior in which student is engaged	W - Writing G - Playing Academic Game RA - Reading Aloud RS - Silent Reading TA - Talking About Academics ANQ - Answers Academic Question ASK - Asks Academic Question AT - Passive Response RH - Raising Hand LM - Looking for Materials M - Moves to New Academic Station PA - Play Appropriate DI - Disruptive PI - Play Inappropriate IT - Inappropriate Task TNA - Talking About Non-academics IL - Inappropriate Locale LA - Look Around SST - Self Stimulation

[a]Based on Stanley & Greenwood's (1980) CISSAR: Code for instructional structure and student academic response: Observer's manual. Within the Student Response Event Area, the AT event, which was designated as "Attending" by Stanley and Greenwood, was renamed as "Passive Response" in the present investigation to avoid inappropriate connotations of the responses included within that event.

Table 3

Summary of Reliabilities Calculated During the Study[a]

Reliability	Mean	Range
Behavioral		
Teacher Position	88.2	62-100
Teacher Behavior	92.6	82-100
Student Response	85.5	65-98
Sequential	90.3	74-99

[a]All reliabilities are expressed as percentages.

Table 4

Average Times and Ranges in Time Allocated to Activities[a]

Activity	$\bar{X}$	Range
Reading	81.1	35.0 - 107.4
Math	0.8	0.0 - 15.0
Spelling	0.5	0.0 - 10.5
Handwriting	0.2	0.0 - 4.6
Language	0.1	0.0 - 2.4
Science	0.0	---
Social Studies	0.0	---
Arts/Crafts	0.0	---
Free Time	2.8	0.0 - 25.2
Business Management	0.0	0.0 - 1.0
Transition	1.8	0.0 - 11.2
Academic Activity Composite	82.7	35.7 - 107.4
Non-Academic Activity Composite	4.7	0.0 - 28.7

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 5

Average Times and Ranges in Time Allocated To Tasks[a]

Task	X	Range
Readers	19.3	0.0 - 44.8
Workbooks	11.1	0.0 - 43.0
Worksheets	26.0	0.0 - 62.0
Paper and Pencil	2.9	0.0 - 12.0
Listen to Lecture	0.7	0.0 - 8.0
Other Media	20.5	0.0 - 48.3
Teacher-Student Discussion	1.6	0.0 - 14.7
Fetch and Put Away	4.8	0.0 - 17.5

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 6

Average Times and Ranges in Time Allocated to Teaching Structures[a]

Structure	$\bar{X}$	Range
Entire Group	13.2	0.0 - 51.8
Small Group	63.0	0.0 - 102.2
Individual	11.3	0.0 - 72.4

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 7

Average Times and Ranges in Time in Teaching Positions[a]

Teacher Position	$\bar{X}$	Range
In Front	8.3	0.0 - 44.6
At Desk	8.3	0.0 - 43.2
Among Students	48.7	7.1 - 83.9
Beside Student	5.1	0.0 - 33.2
Back	0.9	0.0 - 8.8
Out	1.9	0.0 - 6.9

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 8

Average Times and Ranges in Time in Teacher Activities[a]

Teacher Activity	$\bar{X}$	Range
No Response	53.5	16.8 - 83.2
Teaching	17.6	1.8 - 39.0
Other Talk	1.4	0.0 - 3.8
Approval	0.3	0.0 - 1.8
Disapproval	0.3	0.0 - 1.9

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 9

Average Times and Ranges in Time Engaged in Student Responding[a]

Student Response	$\bar{X}$	Range
Writing	7.6	2.0 - 16.9
Play Acad Game	1.0	0.0 - 10.5
Read Aloud	1.7	0.0 - 7.9
Read Silently	7.8	0.6 - 26.5
Talk Academics	1.4	0.0 - 7.5
Answer Acad Question	0.8	0.0 - 3.4
Ask Acad Question	0.2	0.0 - 0.8
Passive Response	28.7	12.0 - 43.5
Raise Hand	0.9	0.0 - 6.2
Look for Materials	3.0	0.2 - 8.4
Move to New Acad Task	3.2	0.6 - 8.1
Play Appropriate	5.4	0.0 - 21.8
Disruption	0.3	0.0 - 8.0
Play Inappropriate	1.2	0.0 - 4.0
Inappropriate Task	0.1	0.0 - 1.4
Talk Non-Academics	2.8	0.0 - 11.1
Inappropriate Locale	0.9	0.0 - 6.8
Look Around	6.2	0.8 - 19.2
Self Stimulation	0.1	0.0 - 1.4
Academic Behavior Composite	20.5	6.5 - 37.2
Task Management Composite	41.1	20.8 - 60.2
Inappropriate Behavior Composite	11.6	1.1 - 29.5

[a]Means and ranges are average numbers of minutes for one reading period, based on 27 students.

Table 10

Time Allocated to Activities for Students at Three Reading Group Levels[a]

Activity	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Reading	83.1	93.9	90.5	93.5	72.8	91.2	ns
Math	2.1	2.4	1.4	1.4	0.4	0.5	ns
Spelling	0.1	0.1	1.8	1.9	0.0	0.0	ns
Handwriting	0.5	0.6	0.0	0.0	0.0	0.0	ns
Language	0.3	0.3	0.0	0.0	0.0	0.0	ns
Science	0.0	0.0	0.0	0.0	0.0	0.0	ns
Social Studies	0.0	0.0	0.0	0.0	0.0	0.0	ns
Arts/Crafts	0.0	0.0	0.0	0.0	0.0	0.0	ns
Free Time	1.4	1.6	1.0	1.0	5.0	6.3	ns
Business Management	0.1	0.1	0.1	0.1	0.0	0.0	ns
Transition	0.9	1.0	2.0	2.1	1.6	2.0	ns
Academic Composite	86.1	97.3	93.7	96.8	73.2	91.7	.039
Non-Academic Composite	2.4	2.7	3.1	3.2	6.6	8.3	ns
Total	88.5		96.8		79.8		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 11

Time Allocated to Tasks for Students at Three Reading Group Levels[a]

Task	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Readers	22.6	26.0	19.4	20.0	20.2	25.4	ns
Workbooks	12.2	14.0	17.2	17.8	6.3	7.9	ns
Worksheets	24.6	28.3	32.5	33.5	21.7	27.2	ns
Paper & Pencil	4.4	5.1	2.7	2.8	2.0	2.5	ns
Listen to Lecture	1.2	1.4	0.6	0.6	0.1	0.1	.026
Other Media	17.0	19.6	16.4	16.9	22.2	27.8	ns
Teacher-Student Discussion	1.2	1.4	2.3	2.4	2.5	3.1	ns
Fetch & Put Away	3.6	4.2	5.8	6.0	4.7	6.0	ns
Total	86.8		96.9		79.7		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 12

Time Allocated to Teaching Structures for Students at Three Reading Group Levels[a]

Structure	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Entire Group	12.1	13.7	16.4	17.0	14.7	18.4	ns
Small Group	73.1	82.9	79.7	82.5	42.6	53.3	.008
Individual	3.0	3.4	0.5	0.5	22.6	28.3	.020
Total	88.2		96.6		79.9		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 13

Time in Various Teacher Positions for Students at Three Reading Group Levels[a]

Teacher Position	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
In Front	13.3	18.1	6.4	7.9	7.6	11.3	ns
At Desk	11.9	16.2	12.0	14.7	6.7	10.0	ns
Among Students	43.7	59.5	59.1	72.6	40.2	60.0	ns
Beside Student	1.2	1.6	1.0	1.2	10.9	16.3	.010
Back	1.5	2.0	0.7	0.9	0.4	0.6	ns
Out	1.8	2.4	2.2	2.7	1.2	1.8	ns
Total	73.4		81.4		67.0		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 14

Time in Various Teacher Activities for Students at Three Reading Group Levels[a]

Teacher Activity	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
No Response	55.0	75.0	63.4	77.9	42.7	63.6	.004
Teaching	16.3	22.2	16.7	20.5	22.3	33.2	ns
Other Talk	1.5	2.0	1.0	1.2	1.4	2.1	ns
Approval	0.2	0.3	0.1	0.1	0.5	0.7	.013
Disapproval	0.4	0.5	0.2	0.2	0.2	0.3	ns
Total	73.4		81.4		67.1		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 15

Student Response Time for Students at Three Reading Group Levels[a]

Student Response	High		Middle		Low		Sig Level[b]
	X	%	X	%	X	%	
Writing	8.6	11.7	10.1	12.4	5.2	7.8	.030
Play Acad Game	1.0	1.4	0.5	0.6	1.9	2.8	ns
Read Aloud	0.9	1.2	0.4	0.5	2.4	3.6	.002
Read Silently	9.1	12.4	9.3	11.5	4.9	7.3	ns
Talk Academics	0.8	1.1	1.2	1.5	2.4	3.6	ns
Answer Acad Question	0.8	1.1	0.7	0.9	0.8	1.2	ns
Ask Acad Question	0.3	0.4	0.4	0.5	0.2	0.3	ns
Passive Response	27.7	37.7	31.8	39.2	29.9	44.6	ns
Raise Hand	1.1	1.5	1.4	1.7	0.8	1.2	ns
Look for Materials	2.5	3.4	3.1	3.8	2.8	4.2	ns
Move to New Acad Task	2.8	3.8	3.8	4.7	2.6	3.9	ns
Play Appropriate	3.9	5.3	6.2	7.6	4.4	6.6	ns
Disruption	0.9	1.2	0.0	0.0	0.0	0.0	ns
Play Inappropriate	1.3	1.8	0.8	1.0	1.5	2.2	ns
Inappropriate Task	0.0	0.0	0.2	0.2	0.1	0.1	ns
Talk Non-Academics	3.4	4.6	2.3	2.8	1.7	2.5	ns
Inappropriate Locale	1.8	2.4	1.0	1.2	0.1	0.1	ns
Look Around	6.4	8.7	7.9	9.7	5.2	7.8	ns
Self-Stimulation	0.2	0.3	0.0	0.0	0.1	0.1	ns
Academic Composite	21.5	29.2	22.6	27.9	17.8	26.6	ns
Task Management Composite	38.0	51.7	46.3	57.1	40.5	60.4	ns
Inappropriate Composite	14.0	19.1	12.2	15.0	8.7	13.0	ns
Total	73.5		81.1		67.0		

[a]Entries are mean numbers of minutes, and percentages of total minutes for one day, based on 9 students in each group.

[b]Significance levels are from one-way ANOVAs on the mean times over two days.

Table 16

PIAT Scores by Reading Groups

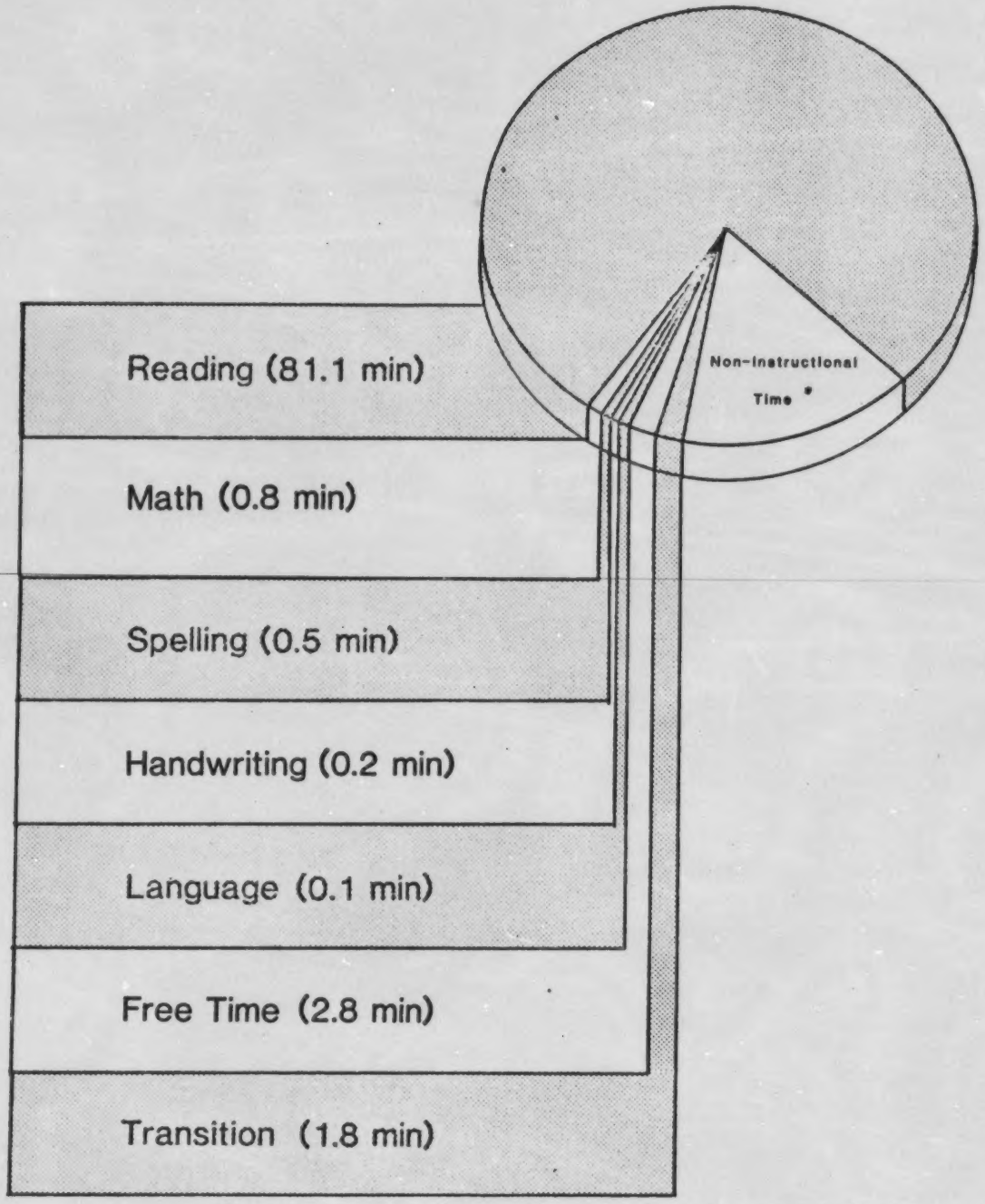
Subtest	Low		Middle		High		Sig. Level
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
Math	98.33	(9.69)	100.29	(7.25)	112.67	(9.11)	.008
Reading Recognition	97.00	(14.91)	109.71	(8.28)	123.67	(9.06)	.001
Reading Comprehension	94.83	(13.15)	105.43	(7.21)	116.00	(5.64)	.001
Spelling	97.00	(8.83)	106.88	(5.82)	115.33	(7.97)	.001
Information	100.33	(18.55)	109.00	(4.20)	109.89	(7.42)	ns
Total	98.50	(12.72)	107.29	(5.38)	116.33	(7.05)	.003
	N=6		N=7		N=9		

Table 17

Significant Correlations Between PIAT and Student Responses [a]

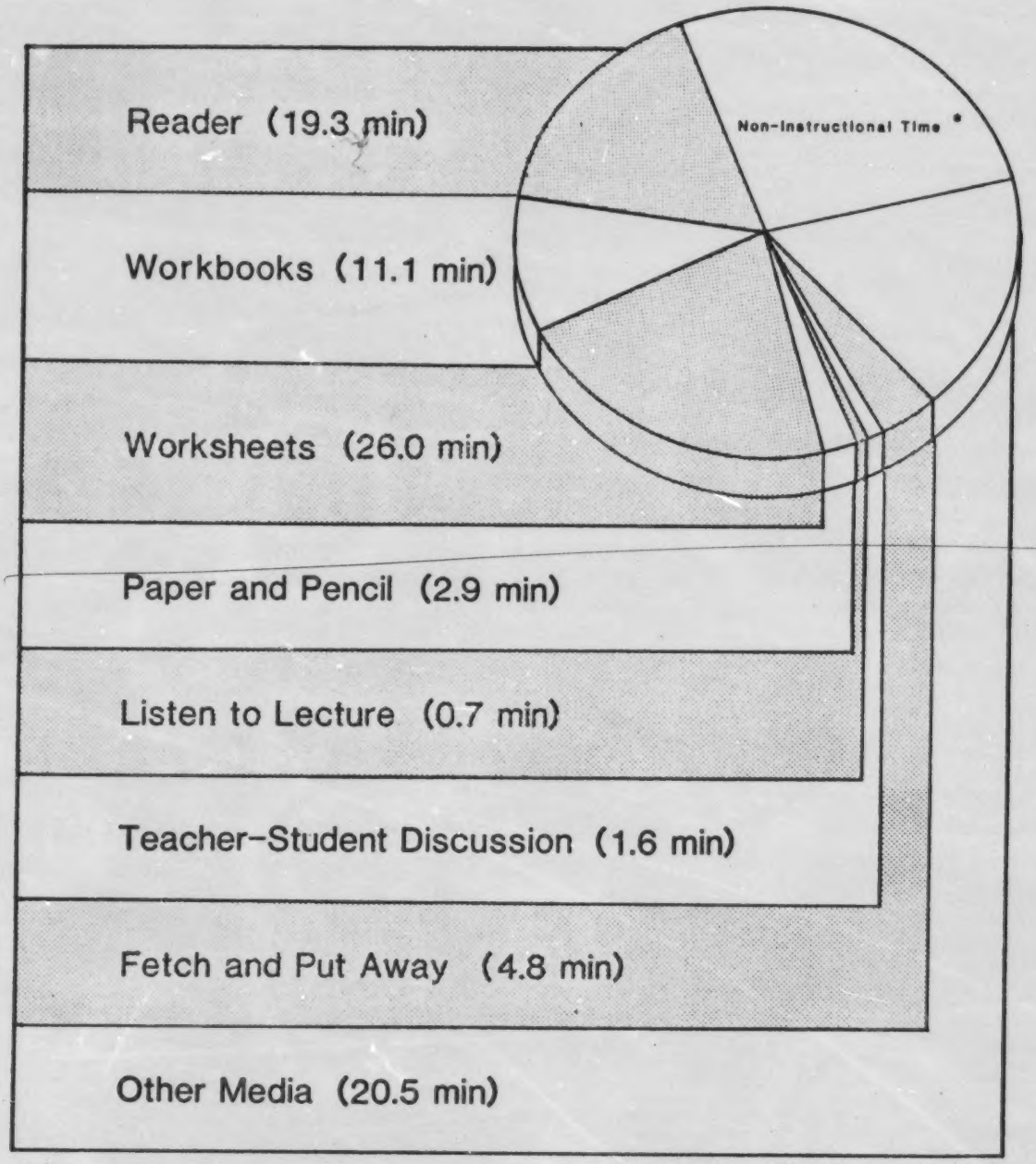
Observation Variable	with	PIAT Subtest	r	p
Writing		Spelling	.46	.017
Academic Game		Reading Recognition	-.42	.025
Academic Game		Reading Comprehension	-.46	.015
Academic Game		Spelling	-.39	.036
Read Aloud		Reading Recognition	-.49	.010
Read Aloud		Reading Comprehension	-.45	.017
Read Aloud		Spelling	-.61	.001
Read Aloud		Total	-.42	.026
Read Silent		Reading Comprehension	.48	.012
Read Silent		Spelling	.38	.042
Read Silent		Total	.37	.046
Talk Academic		Reading Recognition	-.60	.002
Talk Academic		Reading Comprehension	-.57	.003
Talk Academic		General Information	-.46	.016
Talk Academic		Spelling	-.53	.005
Talk Academic		Total	-.56	.003
Answer Question		Reading Recognition	.40	.034
Answer Question		Reading Comprehension	.39	.036
Answer Question		Math	.37	.043
Answer Question		Total	.41	.029
Raise Hand		Reading Recognition	.39	.037

[a] N=22 students.



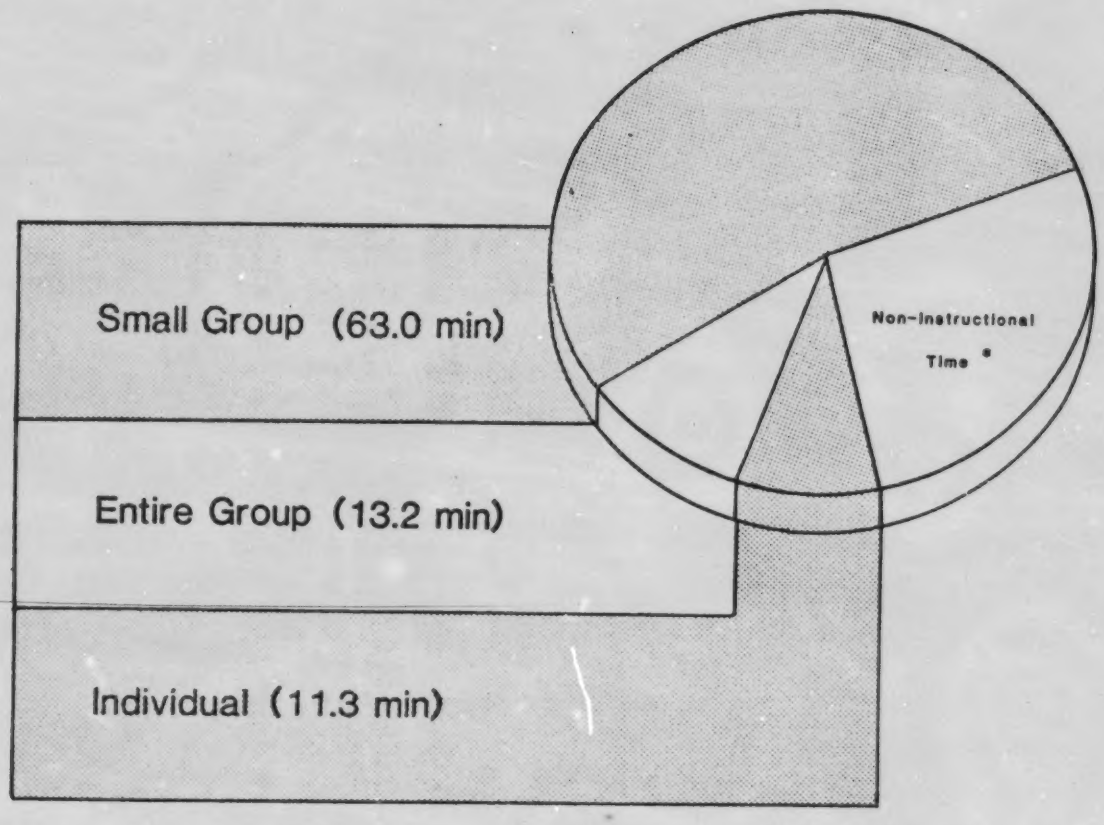
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 1. Average times allocated to activities.


Reader (19.3 min)
Workbooks (11.1 min)
Worksheets (26.0 min)
Paper and Pencil (2.9 min)
Listen to Lecture (0.7 min)
Teacher-Student Discussion (1.6 min)
Fetch and Put Away (4.8 min)
Other Media (20.5 min)
Non-Instructional Time *

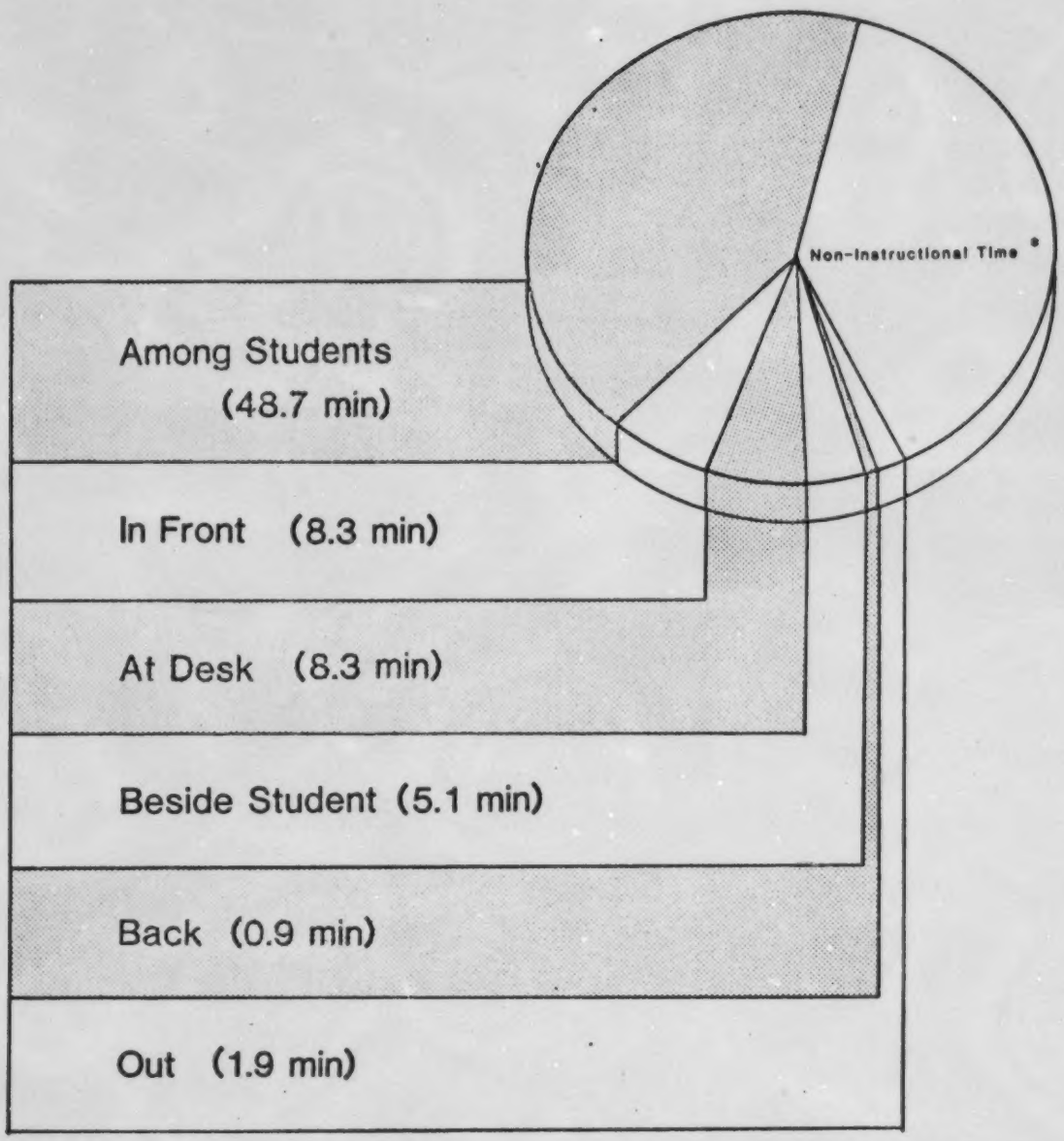
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 2. Average times allocated to tasks.



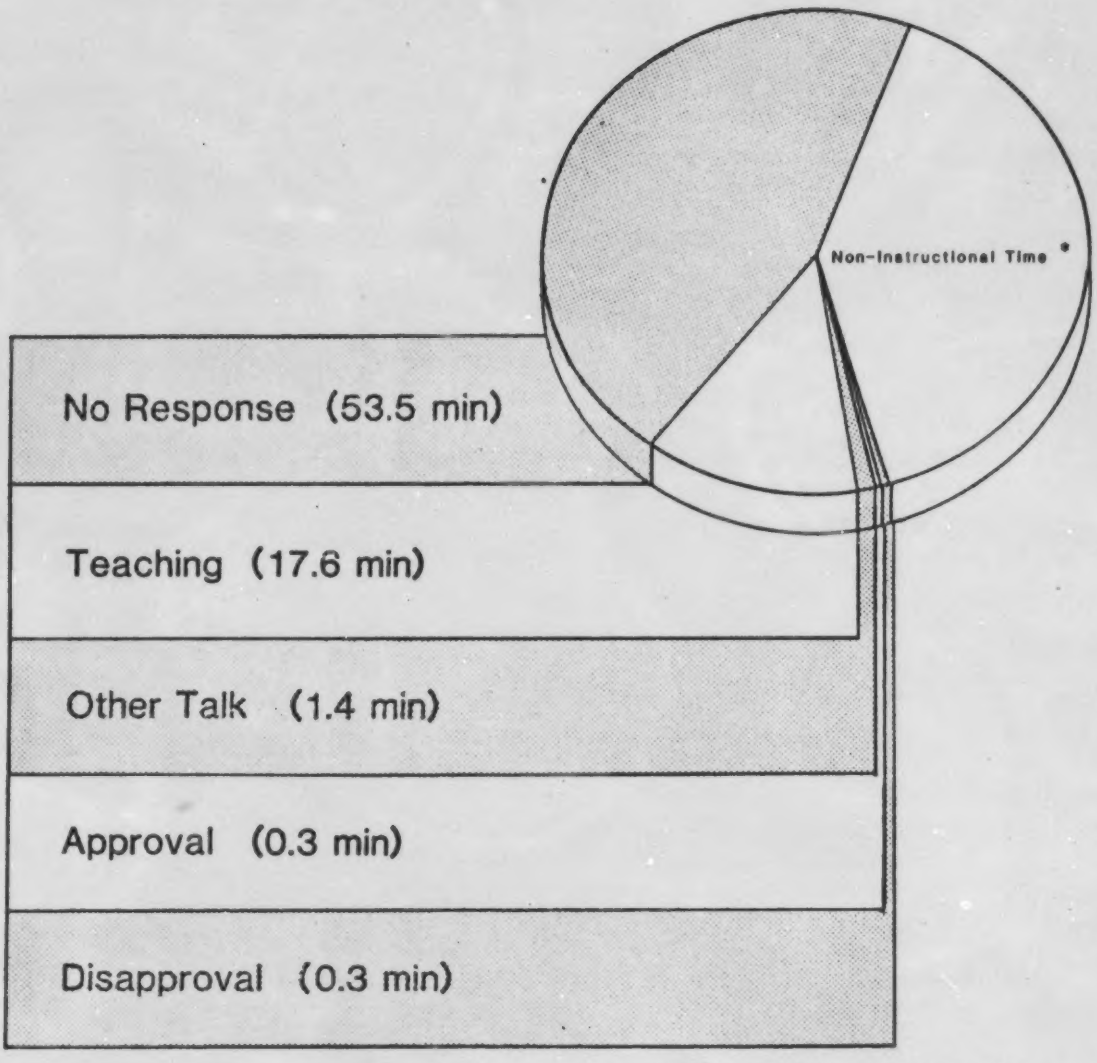
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 3. Average times allocated to teaching structures.



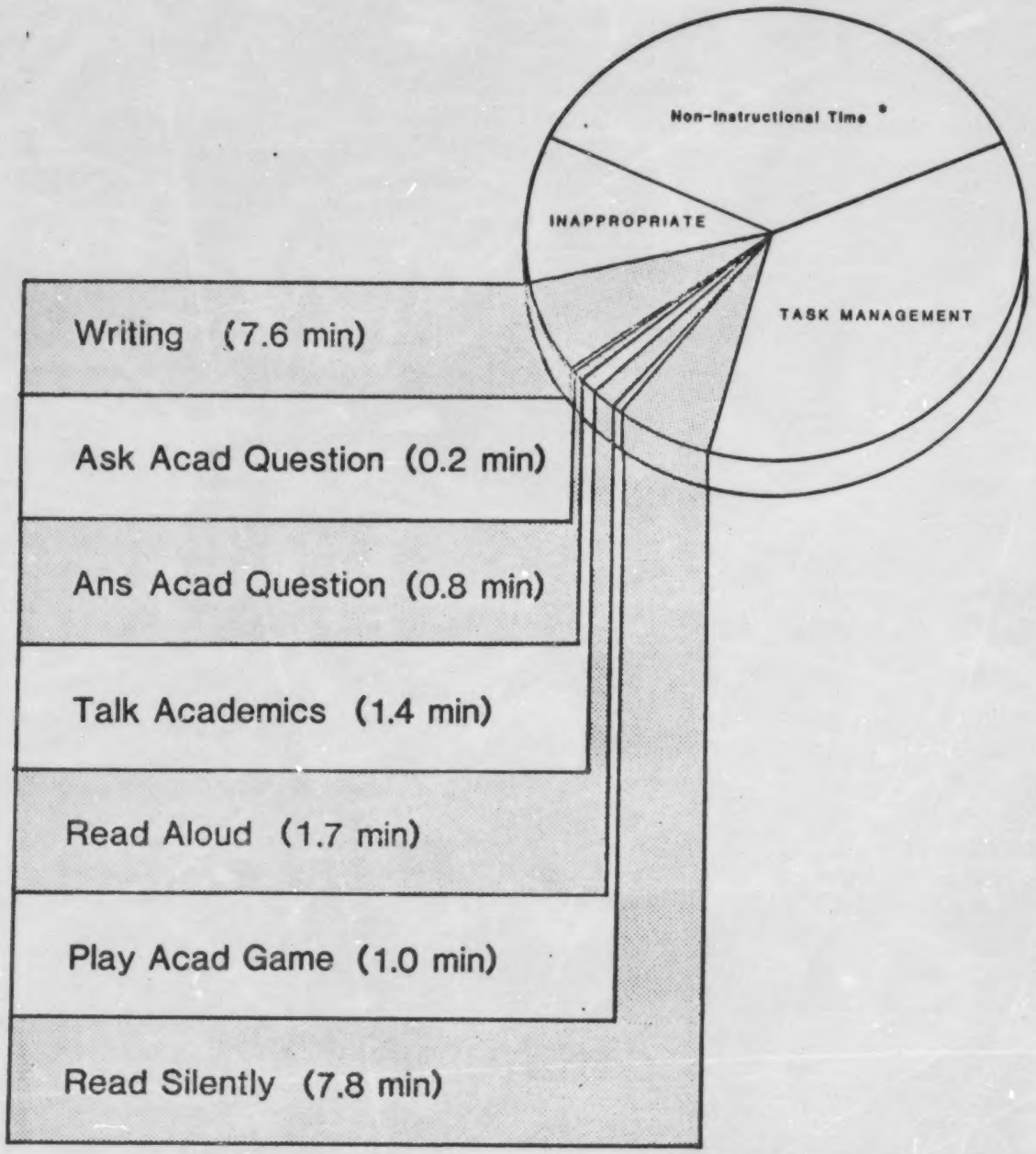
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 4. Average times allocated to teaching positions.



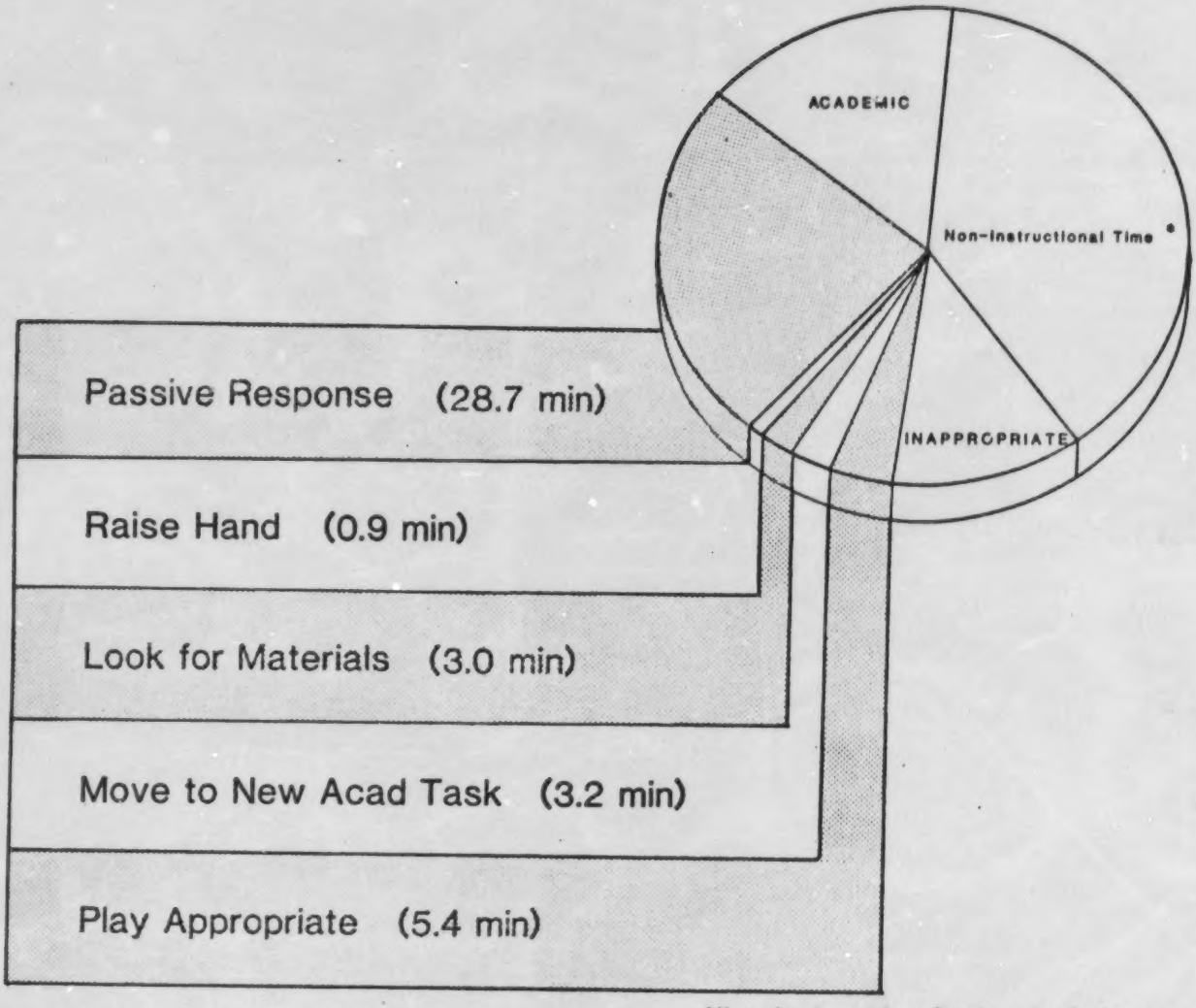
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 5. Average times allocated to teacher activities.



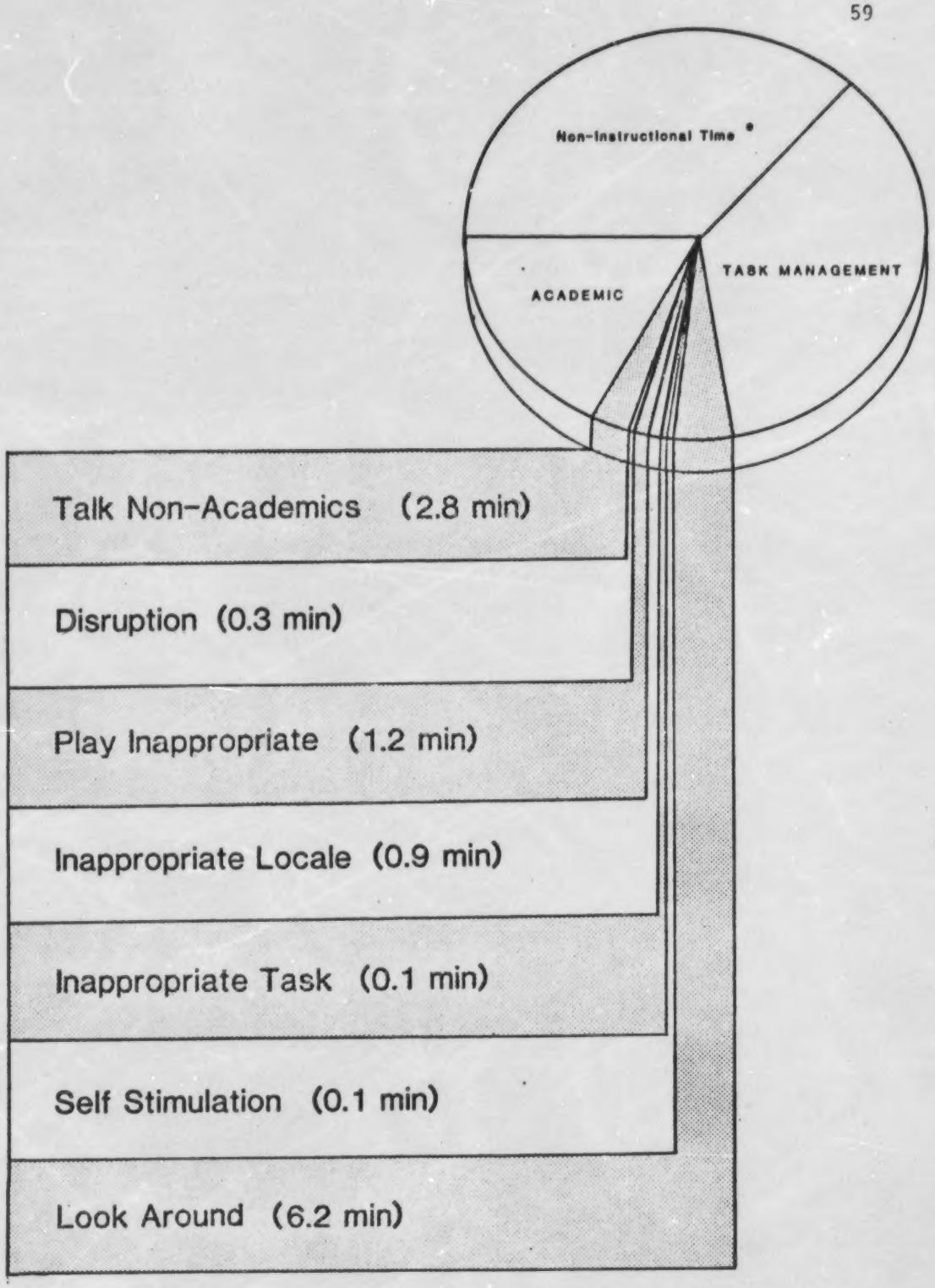
*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 6. Average times engaged in academic responding.



*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 7. Average times engaged in task management responding.



*Non-instructional time includes time out of the classroom (e.g., moving between classes).

Figure 8. Average times engaged in inappropriate responding.

APPENDIX A

Definitions and Examples of CISSAR Events

Instructional Activity

(Subject area of learning experience being provided to target student by teacher, aide, or peer tutor or by target student to tutee.)

> Note: Anytime the activity changes, move to a new coding block

Activity/Code	Definition	Examples	Special Notes
Reading (R)	Reading instructions or activity; oral and silent reading from books, discussion of words, sounds, vowels, consonants, phonics	reading library book talking about ch sound sitting at reading table draw picture about story	Include: • how to use dictionary, encyclopedia,...(reference books) • learning ABC's (but, not when learning how to write) • draw picture of what read; act out story
Math (M)	Math instructions or activity; numbers, geometry, time, weights, metrics, measurement, story problems	working time worksheet measuring each other's height writing math problem on board finds examples of "less than" find number of days in 2 years	
Spelling (S)	Spelling instruction or activity; copying spelling work, spelling test	taking spelling test playing spelling bee game looking up correct spelling of missed word	Include: • use of dictionary to find spelling of word
Handwriting (H)	Handwriting instruction or activity; focus on mechanics of writing letters or words (print, cursive, etc.); how to hold pencil, how to move arm, discussion of size of letters, lines on paper	practice penmanship matches capital and lower case letters	

Instructional Activity - cont.

Activity	Definition	Examples	Special Notes
Language (L)	Language instruction or activity; focus on speech, vocabulary, and language meaning (words, physical relationships, etc.); creative writing; listening exercises; other languages	writing book report on story in reader points to "on top," "under," etc. learns how to say "thank you" in 5 languages	Include: • book reports (writing or reading) • looking up definition in dictionary • public speaking exercises
Science (Sc)	Science instruction or activity; science-related topics (chemistry, electricity, space travel, electronics, nature, insects, weather, mammals, body, exercise, personal hygiene)	discuss weather perform experimentation on electricity school nurse talks about hygiene reads Weekly Reader article about insects	Include: • watching or doing experiment • exercises in classroom • sex education (physical aspects-not relationships) • speakers on drugs/alcohol • science article in Weekly Reader
Social Studies (Ss)	Social studies instruction or activity; cultures, ways of life, jobs, roles; maps; music topics (instruments, singing, scales, notes)	talk about sex biases sing Thanksgiving songs label map of U.S. listen to lecture on Civil War	Include: • sex education - relationship in general • unit on friendships • special education topics - relations with handicapped • customs; holidays • history
Arts/Crafts (Ac)	Art-related instruction or activity; coloring, drawing, cutting, pasting	make poster of primary colors draw picture of self watch slides of sculptures	Include: • viewing art (own or others) • decorating (bulletin board, classroom) Within Ac time, putting away or getting new materials is still Ac; only change to Tn at beginning or end of Ac time.

Instructional Activity - cont.

Activity	Definition	Examples	Special Notes
Free Time (Ft)	Period during which student may choose activity - can be academic; study time	works math when told to do anything wants to do after student finishes assignment, is in library area reading	Include: • extra-credit work If everyone has free time, but target student is told what he/she must do, do not code Ft. Code the subject area which he is required to do.
Class Business/ Management (Bm)	Activity focused on scheduling, discipline, rules; usually occurs regularly at start of day; show and tell	picks up lunch tickets class talks about fight on playground during recess say "here" during attendance check	Include: • Pledge of Allegiance, morning songs • sex, relationships, drugs, etc. when related to specific problem in school • taking attendence
Transition (Tn)	Time between two other activities; teacher signals end of one (put away) and time to prepare for new activity. Ends when teacher starts instruction in new activity	class breaks into groups line up to go to recess put away readers and get out math books	For arts/crafts, Tn is coded only before and after entire activity
Can't Tell (CT)	Activities that do not seem to fit in other categories. See coordinator to discuss - must change to another code.		Make note of activity on separate sheet so will remember events to discuss with coordinator

Academic Task

(Materials used by target student for instructional activity)

Note: Any time the task changes, move to a new coding block

Task/Code	Definition	Examples	Special Notes
Readers (Rr)	Printed book, bound material	library book math textbook comic book	Include: • magazines, Weekly Reader • reference books (dictionary, encyclopedia)
Workbooks (Wb)	Paperback material in which student could write (even if student is required by teacher to write on separate paper or in notebook)	spelling workbook language workbook handwriting workbook	
Worksheets (Ws)	Separate prepared teacher sheets (usually ditto or photocopy) on which students write; blackboard writing by student	student practices letters on blackboard dittoed crossword puzzle	Include: • 1 page torn from workbook • writing Weekly Reader exercise • teacher made or printed tests
Paper and Pencil (Pp)	Tasks where student writes on paper using pencil, pen, crayon, etc.; includes writing in notebook	piece of notebook paper for spelling test	If students are taking notes during teacher lecture to remember points, code Ll
Listen to Teacher Lecture (Ll)	Teacher talking or writing on board, and student expected to look and listen	watches teacher demonstrate exercises listens to teacher talk about telling time takes notes as teacher presents ideas for field field trip	Code Ll even if student is taking notes

Task/Code	Definition	Examples	Special Notes
Other Media (O_m)	Special materials; film, tape recorder, game, arts and crafts materials, clocks, telephone, play/drama	watches movie listens to tape recorder works on calculator acts out story part	Include: • calculator • animals
Teacher-student Discussion (Tsd)	Student talking with teacher; ask-answer question All other tasks take precedence	student answers teacher question students in class talk with teacher about friends student tutors another on ABC's student reads book report to class	Include: • peer tutoring unless using other materials • student verbal presentations (including reading book report) All other tasks take precedence over Tsd. Take cue from teacher for change from L1 to Tsd.
Fetch/Put away (Fp)	Students changing materials-putting away and getting, cleaning up	line up for lunch picks up materials to throw away before completing art project student hands out worksheets	When student has absolutely no materials, and is not supposed to have any materials (such as when has free time), code Fp

Structure

(How student is grouped for instructional activity)

Note: Any time the structure changes, move to a new coding block

Structure/Code	Definition	Examples	Special Notes
Entire Group (Eg)	Student receiving instruction with all other students in classroom	class lecture class freetime	For Eg, teaching (or free time is for <u>everyone</u>) Number is <u>not</u> the criterion - if class has 5 students and instruction is directed to all of them, code Eg
Small Group (Sg)	Student is in part of class that has been separated from rest	reading group discussion group students in pairs	Include: • two students working together away from rest of class
Individual (I)	Student is alone (in corral, at table) or working one-to-one with teacher or aide	student working on science experiment alone while other read from text aide tutors student	Does <u>not</u> occur during free time <u>except</u> when free time was created especially for student

Teacher Position

(Place of teacher in relation to all students)

Teacher Position/ Code	Definition	Examples	Special Notes
In Front/IF	in front of majority of students	- standing at blackboard - at front bulletin board	
At Desk/AD	standing or seated at teacher's desk	- looking in desk for note-book - at desk collecting lunch money	
Among Students/AS	standing or seated among students	- walking around class checking student work - seated with reading group	
Side/S	standing to the side of students and not AS	- student leaning over child's desk - talking to student at his desk	- working individually with a student
Back/B	standing or sitting in back of classroom away from majority of students	- working at isolated desk in back of room -putting up art pictures on back bulletin board	
Out of Room/O	out of the room	- in hall talking to parent - in teacher's lounge	

Teacher Activity

(Coded in relation to target student or group in which he is a member)

Teacher Behavior/ Code	Definition	Examples	Special Notes
No Response/NR	makes no observable response	- at desk grading papers - out of room	- working individually with another student
Teaching/T	instruction or giving a lesson to students child must have opportunity to learn	- explaining at blackboard - asking question - talking about academics, e.g. giving directions	- key is active involvement by teacher
Other Talk/OT	- talking about class business, rules, schedules, future activities - all teacher talk that is not approval, disapproval, or teaching	- talking about recess - talking about mother's hospital stay - collecting lunch money	
Approval/A	expresses praise for student work or conduct	- teacher hugs student - teacher smiles - "Your map looks great"	- includes verbal comments, gestures, physical behaviors
Disapproval/D	expresses dislike or disgust with student work, appearance or conduct	- frowns at student - that is the wrong answer - "You're not trying"	- includes verbal comments, gestures, and physical behaviors

Student Response

(Academic response, task management, or inappropriate behavior of target student)

Student Response/ Code	Definition	Examples	Special Notes
Academic Responses	student responses made to academic task	- erasing	
Writing/W	students observed marking academic materials with pen, pencil, crayon	- marks answers on ditto sheet with crayon - completes math problems from workbook	- does not include drawing pictures, scribbling - used for tests
Academic Game/G	engaged with an academic media task played individually or with peer	- includes flashcards, word games, coloring, abacus - student responses are verbal, manipulatory or social in nature - 4 students are playing a spelling game	- includes calculator - flashcards when with a classmate or as a practice tool
Read Aloud/RA	when student looking at reading material and saying aloud what is written in print	- student reads a paragraph to rest of reading group -reads a sentence aloud to "sound out" unfamiliar words	- used when teacher checks student's knowledge of flashcard

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Reading Silent/RS	looking at reading material for at least 2 seconds, and/or eye movements indicate scanning materials on desk (3' radius) or held in student's hands. Readers must be open to a page.	- student is reading directions in language workbook - student is scanning workbook for familiar words - student reads to self a set of numbers from math book	- reading words or numbers - not rapid flipping - only code when reading materials include several pages (not worksheet)
Talk About Academics/ TA	talk back and forth about academic materials or assignment	- student tells classmate answer to math question - student talks during show and tell - student recites a poem he's memorized	- child may be talking to himself or a peer - coded only when target student talking, not when listening - when reciting a poem or story from memory - student doing all work in limelight
Answer Academic Question/ANQ	student either verbally or gesturally responds to teacher's academic question	- student says "I don't know" to teacher's question - student spells a word for teacher	- answer may be correct or incorrect - answer should be almost immediate
Ask Academic Question/ Ask	verbally ask the teacher a question related to academics	"Is 3 + 4 = to 7?"	- must be an academic question: When is it time for lunch? is not ASK

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Play Inappropriate/ PI	play not approved by teacher	- play involving squirt guns, toys hidden in desk - shoots rubber bands; paper airplanes	- includes scribbling or drawing at wrong times - code when student puts head on desk when is not supposed to
Inappropriate Task/ IT	engaged in task without teacher approval; not related to task assigned	- student colors to avoid math assignment - reads story during Social Studies	- avoidance of assigned task is key
Talk Non-Academic/ TNA	talks aloud to peer about non-academic materials not related to assignment	- students talk about after school plans - "What time is lunch?"	- can be directed to teacher or student - includes passing notes
Inappropriate Locale/ IL	child out of seat and away from instruction site looses contact with seat	- student goes to bathroom without permission - student becomes angry and leaves school - student stands on desk	
Look Around/LA	student looking away from academic task	- child looks out window - looks at floor then ceiling	- code AT if student looking at classmate and answering question
Self Stimulation/ SST	active behaviors of child like rapid rocking or shaking; maintained for 2 to 3 seconds	- student rocks back & forth - rapidly moves his pencil back and forth	- single major feature of child's behavior - academic responses take precedence over SST

Student Response continued

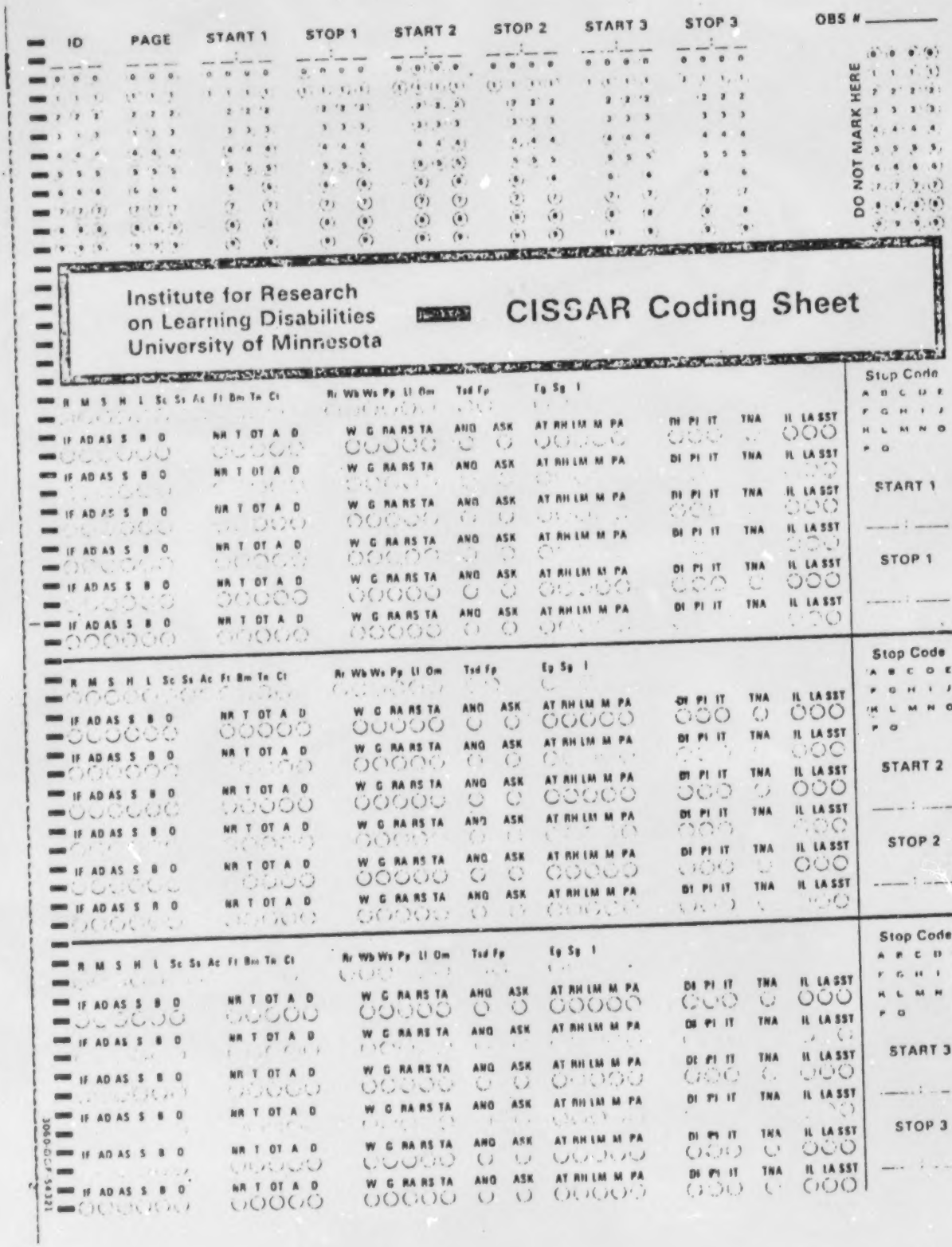
Student Response/ Code	Definition	Examples	Special Notes
Look for Materials/ LM	student observed looking for or putting away materials; includes use of materials away from desk (e.g. answer sheets, reference books)	- student goes to teacher's desk for correction sheet - student returns dictionary to shelf - student looks for paper and pencil	- may include use of reference materials away from desk; look up word in dictionary sharpening pencil stapling
Moves to New Academic Station/M	student moves to new area as station for next activity- activity is in transition	- student moves to learning center during free time - students lining up for recess	- includes lining up and moving when in compliance with teacher request
Play Appropriate/PA	engaged in play behaviors approved by teacher may involve toys from home; may be strictly social	- students play musical chairs during party - students play Monopoly during free time	- code G if play becomes an academic game - code when student puts head on desk when told to or when has free time drawing, coloring drinking water, washing hands
Inappropriate behavior			
Disruption/DI	behaviors which are aggressive or produce loud noises: includes loud talk	- trips another student - shakes fist at other student - yells - poke another student	- DI takes precedence over inappropriate locale

Student Response continued

Student Response/ Code	Definition	Examples	Special Notes
Task Management	student behaviors which enable student to engage in academic task -- not direct responses to academic tasks		
Passive Response	student is looking at teacher for instructions; at blackboard for direction; or at another student asking or answering a question -- Key: looking at teacher or peer	- student looks at teacher while she lectures - student pages through math book to final assignment - teacher asks student to pass out ditto sheets to class	- coded for listener whe two students are tal ing about academics - rapid flipping of page - two students are playi a game; target stude observing - reading (ect.) takes precedence
Raising Hand/RH	student's hand raised; may be accompanied by looking for teacher and if student raises hand in a request to answer teacher question	- teacher asks question and student raises hand to respond - student needs help with math so raises hand to alert teacher	- RH plus yelling equals DI (disruption)

APPENDIX B

Optical Scanner Coding Sheet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STOP 1
START 2
STOP 2
START 3
STOP 3
OBS #
DO NOT MARK HERE
Institute for Research
on Learning Disabilities
University of Minnesota
CISSAR Coding Sheet
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STOP 1
START 2
STOP 2
START 3
STOP 3

APPENDIX C

Guidelines for Anecdotal Recordings

Observer Number _____

Observation Pages _____

Guidelines for Anecdotal Recordings

School # _____ Class # _____ Student # _____

Classroom Procedures (Note general class arrangement, schedule, and atmosphere. Anything unusual?)

Target Student (Comment briefly on each of the following areas for the target student observed.)

Location (where does the child sit in relation to where teacher does most teaching?)

Physical appearance (is child's appearance similar to peer group?)

Teacher-student relationship (are interactions between teacher and student similar to those of teacher with other students?)

Peer relationships (are interactions between target student and other students similar to those among most students in class?)

Attention to task (how does target student compare to other students?)

Other (is there anything about the target student that seems different from other students in the class?)

Validity of Observation (Is there any reason why you would believe that the observation is not a valid reflection of typical classroom activities, interactions, etc?)

APPENDIX D

Specific Research Questions

Specific Research Questions

1. To what extent are there significant differences between groups in time allocated to various activities?

    - Differences between groups were not significant.

2. To what extent are there significant differences between groups in time spent in various tasks?

    - High reading group students received more time allocated to listening to teacher lecture (about 12 seconds per reading period) than low reading group students (almost zero seconds).

3. To what extent are there significant differences between groups in time spent in various class structures?

    - Middle and high reading group students received more small group reading instruction (one hour, 10 minutes and one hour, 20 minutes, respectively) than low reading group students (42 minutes per day).

    - Low reading group students received more individual reading instruction (about 23 minutes per day) than middle and high reading group students (both less than three minutes).

4. To what extent are there significant differences between groups in time spent with the teacher in various teacher positions?

    - Low reading group students received more instruction with the teacher at their side (about 11 minutes per reading period) than middle or high reading group students (who averaged one minute or less per reading period).

5. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities?

    - The amount of time the teacher was not exhibiting a teaching response toward the student was higher for middle and high reading group students (one hour, three minutes and 55 minutes, respectively) than for low reading group students (about 42 minutes).

- Low reading group students received more teacher approval (about 45 seconds per reading period) than middle and high reading group students (15 seconds or less).

6. To what extent are there significant differences between groups in time spent in various student responses?

   - During reading instruction, middle reading group students spent more time writing (about 10 minutes) than for low reading group students (about five minutes). High group students spent about eight and one-half minutes.

   - During reading instruction, low group students spent more time reading aloud (about two and one-half minutes per period) than either middle or high group students (about 25 and about 55 seconds, respectively).

7. To what extent are there significant differences between groups in time spent in various student responses as a function of class activity?

   - Differences between groups were not significant.

8. To what extent are there significant differences between groups in time spent in various student responses as a function of different tasks employed?

   - Differences between groups were not significant.

9. To what extent are there significant differences between groups in time spent in various student responses as a function of class structure.

   - During individual reading instruction, low group students answered more questions (about 12 seconds per period) than either middle or high group students (both were zero). Low group students also were not engaged in an active academic response during individual instruction more often than middle or high group students during individual instruction (about seven minutes versus about 20 seconds and about 40 seconds, respectively). Low group students spent more time playing appropriately during individual instruction than middle or high group students (less than 30 seconds for the low group, no time for middle and high groups). Low group students more time talking about non-academics than middle and high group students (about 30 seconds per period compared to no time for middle and high).

   - During small group instruction, middle and high students asked more questions (both less than 20 seconds) than low group students (almost zero).

10. To what extent are there significant differences between groups in time spent in various student responses as a function of teacher position?

    - While the teacher was teaching reading among the students, middle reading group students spent more time writing (about seven minutes) than low and high students (about two and one-half and four and one-half minutes, respectively).

    - While the teacher was teaching reading at the side of an individual student, low students were more often engaged in writing (about 40 seconds), talking about academics (less than two minutes), and not exhibiting an active academic response (about five and one-half minutes). Middle and high students spent less than 30 seconds in each of these activities.

11. To what extent are there significant differences between groups in time spent in various student responses as a function of teacher activity?

    - While the teacher was teaching, low reading group students spent more time reading aloud (about one minute) and talking about academics (about one and one-half minutes) than either middle or high group students, who spent less than 30 seconds in these activities.

    - While the teacher was not directing a teaching response toward the student, middle and high reading group students were more often engaged in writing (nine minutes and eight minutes, respectively) than low group students (about four minutes).

    - While the teacher was not directing a teaching response toward the student, low reading group students were more often engaged in reading aloud (about one minute per day) than middle or high group students (both less than about 30 seconds per day).

    - While the teacher was not directing a teaching response toward the student, middle reading group students were higher than low reading group students in the frequency of not being engaged in academic responding (19 minutes versus 14 minutes). High students exhibited about 16 minutes of not being engaged in academic responding.

    - While the teacher was not directing a teaching response toward the student, middle group students spent more time moving to a new academic station (about three and one-half minutes) than either low or high group students (each about two minutes).

12. To what extent are there significant differences between groups in time spent in various class structures as a function of class activity?

    - Middle and high reading groups received more small group reading instruction (one hour, seven minutes and one hour, 10 minutes, respectively) than low reading groups (about 38 minutes).

    - Low reading groups received more individual reading instruction (about 20 minutes) than middle or high groups (less than 30 seconds).

13. To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of class activity?

    - Differences between groups were not significant.

14. To what extent are there significant differences between groups in time spent with the teacher in various teacher activities as a function of class activity?

    - Differences between groups were not significant.

15. To what extent are there significant differences between groups in time spent in different tasks as a function of class activity?

    - Differences between groups were not significant.

16. To what extent are there significant differences between groups in time spent in various class structures as a function of the different tasks employed?

    - Differences between groups were not significant.

17. To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of the different tasks employed?

    - Differences between groups were not significant.

18. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the different tasks employed?

    - Differences between groups were not significant.

19. To what extent are there significant differences between groups in time spent with the teacher in various teacher positions as a function of the class structure?

    - Low reading group students received more individual reading instruction with the teacher at their side

(about 10 minutes) than either middle or high group students (both less than 10 seconds).

20. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the class structure?

    - During small group reading instruction, there was more time during which the teacher did not make a teaching response toward the student for middle and high group students (about 53 and 46 minutes, respectively) than for low group students (about 25 minutes).

    - During individual reading instruction, low reading group students received more time of no teacher response (about 12 minutes) than middle groups (less than 30 seconds) or high groups (about two minutes). Low students also received more teaching during individual instruction (about six and one-half minutes) than either middle or high students (both received almost none). Low reading group students also received more teacher approval (about 36 seconds) during individual instruction than middle or high students, who received none.

21. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of teacher position?

    - While the teacher was at the side of the student, low reading group students received more time of no teacher response (30 seconds), teaching (about one minute,, and approval (less than 10 seconds) than middle and high group students, who received almost none.

22. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the class activity while the student is making no active response?

    - Differences between groups were not significant.

23. To what extent are there significant differences between groups in time spent in various student responses as a function of the different tasks employed during reading?

    - Differences between groups were not significant.

24. To what extent are there significant differences between groups in time spent in various student responses as a function of the class structure during reading?

    - During individual reading instruction, low reading group students spent more time talking about academics (about

two minutes), answering questions (about 10 seconds), not being engaged in an academic response (about six and one-half minutes), looking for materials (about 45 seconds), playing appropriately (about 25 seconds), and looking around (about one minute) than middle or high reading group students who spent almost no time in any of these activities.

- During small group reading instruction, middle and high group students spent more time asking questions (about 20 seconds or less) than low group students (almost no time) and more time writing (eight minutes and six and one-half minutes for middle and high, respectively, and two and one-half minutes for low).

- During small group reading instruction, middle group students spent more time moving to a new academic station (about three and one-half minutes) than low group students (about one and one-half minutes). High group students spent about two minutes moving.

25. To what extent are there significant differences between groups in time spent in various student responses as a function of teacher activity during reading?

    - During reading instruction, while the teacher was not exhibiting a teaching response toward the student, middle students were more often engaged in writing (about eight and one-half minutes) and in moving to a new academic station (about three minutes) than low group students (who spent about four minutes writing and one and one-half minutes moving). High group students spent about seven minutes writing and about two minutes moving while the teacher was not exhibiting a teaching response.

    - During reading instruction while the teacher was not exhibiting a teaching response toward the student, low reading group students were more often engaged in reading aloud (about one minute) than middle or high group students (about 20 seconds and 40 seconds, respectively).

    - During reading instruction while the teacher was teaching, low reading group students were more often engaged in reading aloud (about one minute) and in talking about academics (about one and one-half minutes) than middle or high group students, who spent 10 seconds or less.

26. To what extent are there significant differences between groups in time spent with the teacher involved in various teacher activities as a function of the task employed during reading?

    - Differences between groups were not significant.

27. To what extent are there significant differences between groups in time spent in different tasks as a function of class structure during reading?

    - Differences between groups were not significant.

28. To what extent are there significant differences between groups in time allocated to academic versus non-academic activities?

    - Middle group students were higher than low group students in student academic responding time exhibited during reading (13 1/2 minutes versus 10 1/2 minutes per reading period). High group students spent about 12 1/2 minutes per reading period engaged in academic responding.

29. To what extent are there significant differences between groups in time spent in academic responding, task management, and inappropriate behaviors?

    - Differences between groups were not significant.

30. To what extent are there significant differences between groups in academic responding, task management, and inappropriate behaviors as a function of whether the activity is academic or non-academic?

    - Differences between groups were not significant.

PUBLICATIONS

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